Environmental Assessment

Ucore Bokan Mountain
Mining Plan of Operations

United States
Department of
Agriculture

Forest Service

Tongass
National Forest
R10-MB-756

January 2013

Craig Ranger District
Craig, Alaska

What action is proposed?	The proposed action is the plan of operations submitted by Ucore Rare Metals, Inc. The estimated area of disturbance is approximately 5 acres. The plan of operations proposes geotechnical studies, including temporary access trails, to determine the feasibility of future development actions. Also included in the plan is installation of a temporary camp.
Why?	The Forest Service has a regulatory obligation to analyze proposed plans of operations (36 CFR §228.5). The Forest Service has received a proposal for a plan of operations at the Bokan Mountain site on Prince of Wales Island.
What other action would meet the same need?	None
What would it mean to not meet the need?	The Forest Service would not meet their regulatory obligation for mining plan of operations approvals.
What factors will be used when making the decision between alternatives?	The environmental assessment does not identify any significant environmental consequences of the Proposed Action
Are there any ways to mitigate adverse effects?	Mitigation measures were developed for the proposed plan of operations to minimize any potential resources affected by the Proposed Action. Mitigations and Best Management Practices (BMPs) will be required and will become part of the plan of operations.
What monitoring is required?	The Forest Service will inspect operations regularly to determine if the operator is in compliance with their approved mining plan of operations.

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Introduction

The Forest Service has prepared this Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and State laws and regulations. This EA discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and any alternatives. It also provides the supporting information for a determination to prepare a Finding of No Significant Impact (FONSI).

Additional documentation, including more detailed analyses of project-area resources, can be found in the project planning record located at the Juneau Ranger District, Tongass National Forest in Juneau, Alaska.

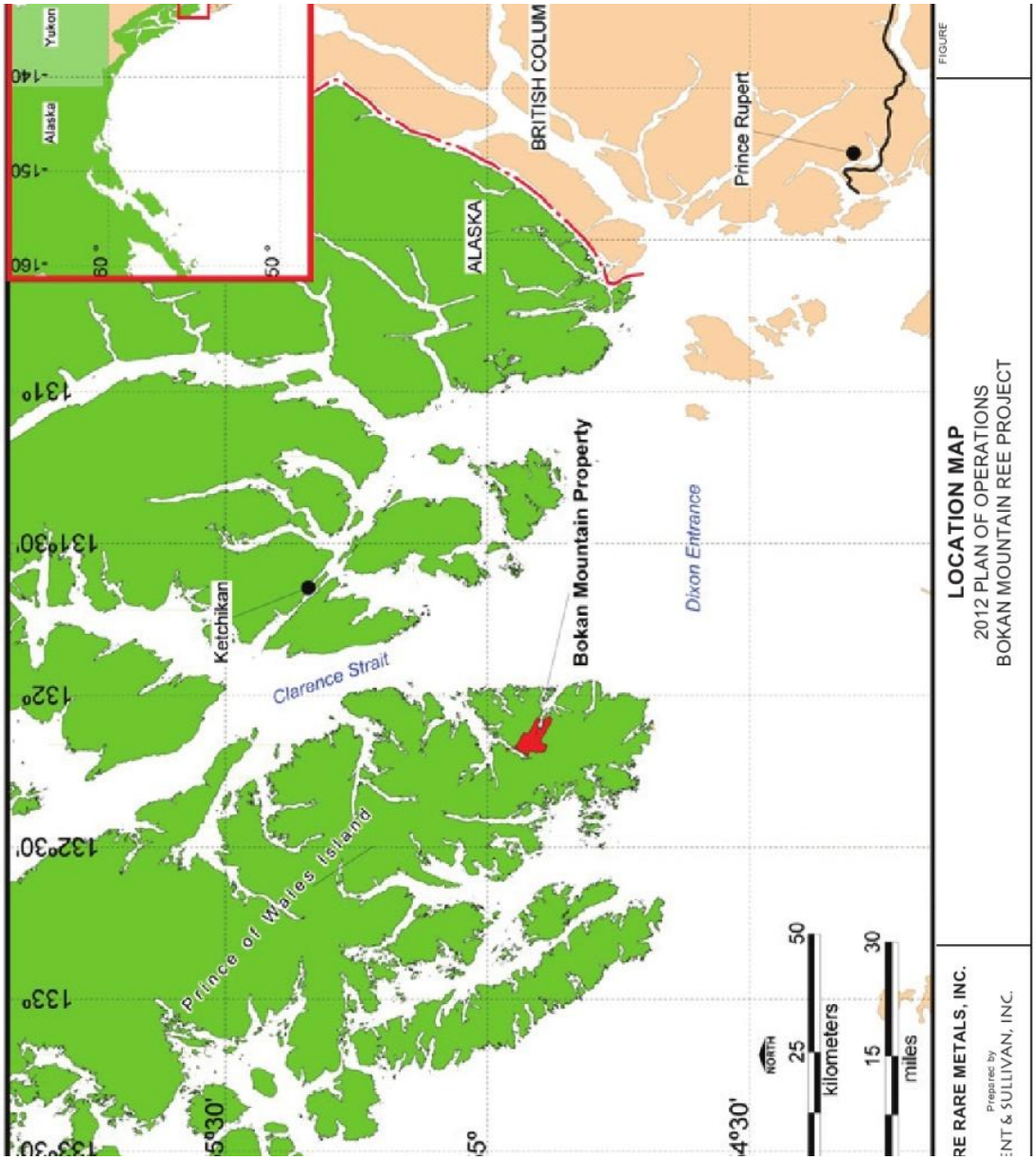
Background

A proposed plan of operations was submitted for the Bokan Mountain site by Ucore Rare Metals, Inc. The site is located in a remote, uninhabited area with access only via boat, float plane, or helicopter. Existing site facilities and infrastructure consist of about 2 ½ miles of gravel roads between Kendrick Bay and the historic Ross-Adams uranium mine, an existing gravel pit, an old exploration cabin along the shoreline, an old floatplane dock, and an old barge ramp load-out area on the shoreline, all constructed to service past mining at the Ross-Adams deposit and pre-1980 exploration campaigns. In addition, fuel storage facilities, a temporary crew support building, a helipad, equipment yard, and a temporary core shack have been approved in recent years to support Ucore's exploration program. The proposed plan of operation requests authorization for geotechnical and environmental studies to determine the feasibility of future development activities. The proposed plan of operations includes: track-mounted drilling for geotechnical and environmental purposes; helicopter-supported drilling for geotechnical, environmental, and exploration purposes, use of the existing gravel pit; and installation of an approximately 12 person temporary camp facility. Past exploration and mining conducted on the Bokan Mountain site is associated with the Ross-Adams uranium mine, which is a separate deposit from the rare metals deposit and is separated geographically from the proposed project area. Use of a portion of the existing Ross-Adams mine road is also currently approved.

Location

The project site is located on the south-eastern portion of Prince of Wales Island between the West Arm of Kendrick Bay and the South Arm of Moira Sound. Ucore's claim block consists of 512 federal lode claims within the Craig Ranger District of Tongass National Forest. The claims are located within the following sections of the Copper River Meridian:

- Township 80 South, Range 88 East, Sections 5, 8, 9, 14 through 17, and 20 through 36;
- Township 80 South, Range 89 East, Sections 30 and 31;
- Township 81 South, Range 89 East, Sections 2, 3, and 6.



Forest Plan Management Area Prescription

The 2008 Tongass National Forest Land and Resource Management Plan (Forest Plan) provides a framework that guides the Tongass National Forest's day-to-day resource management operations. Part of Forest Plan direction consists of Land Use Designations (LUD) which provides specific direction for managing different geographic areas of the Tongass National Forest.

The project area is located in the Timber Production LUD with an overlay of the Minerals LUD (see Forest Plan pp. 3-116 through 3-121 and 3-122 through 3-127).
Timber LUDs areas are managed to:

- Maintain and promote wood production from suitable forest lands, providing a continuous supply of wood to meet society's needs;
- For sustained long-term timber yields; and,
- To provide a supply of timber from the Tongass National Forest that meets the annual and planning-cycle market demand, consistent with the standards and guidelines for this LUD.

Minerals LUDs are managed to:

- Encourage the prospecting, exploration, development, mining, and processing of locatable minerals in areas with the highest potential for minerals development; and,
- To ensure minerals are developed in an environmentally sensitive manner and other high-valued resources are considered when minerals developments occur.

Legal and Regulatory Framework

Mining claim holders on National Forest System lands have certain rights related to their claims. Mining claim holders generally have the right to:

(1) occupancy and use necessary for prospecting, mining, and processing;
(2) reasonable access for purposes of prospecting, locating, and mining; and,
(3) right to use timber from the claims for mining purposes and necessary clearing [See FSM 2813.13(b) and FSM 2813.14]

Mining claimant rights are subject to applicable Federal and state laws and regulations; including 36 CFR 228 Subpart A and the 1955 Multiple Use Mining Act (30 U.S.C. 612). "[All] operations shall be conducted so as, where feasible, to minimize adverse environmental impacts on National Forest surface resources" (36 CFR §228.8). In addition, the 1955 Multiple Use Mining Act restricts mining operators to using reasonable methods of surface disturbance that are appropriate to their stage of operation (see FSH 2809.15, Section 10.1).

Purpose and Need

The purpose of this project is to respond to the Forest Service's regulatory obligation to process, and modify and/or approve the operator's proposed plan of operations (36 CFR §228.5). The Forest Service has a responsibility to approve or require modifications to the proposed plan of operations in accordance with federal mining and environmental laws.

Proposed Action

The proposed action is the plan of operations submitted by Ucore Rare Metals, Inc. which has an estimated area of disturbance of approximately 5 acres. The plan of operations proposes geotechnical studies, including temporary access trails and installation of a temporary camp, to determine the feasibility of future development actions. Depending on the outcome of geotechnical studies and continued exploration, the operators may submit a plan of operations detailing potential future activities.

Decision Framework

The Craig District Ranger is the authorized officer for this decision. This decision will determine under what terms and conditions (36 CFR §228.5) the proposed plan of operations will be approved.

Public Involvement

The public has been invited to participate in the following ways:

- This proposal was listed on the Tongass National Forest Schedule of Proposed Actions;
- A Legal notice will be published in the Ketchikan Daily News and the Island News;
- This proposal will provided to interested parties, other Federal and State agencies, and local Tribal governments.

Issues

The following issues were identified for this project as being relevant considerations for developing alternatives:

- Effects of mining operations on wildlife resources
- Effects of mining operations on hydrology and fisheries resources
- Effects of mining operations on ecological resources
- Effects of mining operations on heritage resources
- Effects of mining operations on wetlands and soils resources

Alternatives

This section describes and compares the alternatives considered in this EA. All applicable standards and guidelines, and Best Management Practices have been incorporated into the design of the Proposed Action alternatives.

Alternative 1 - No Action

The No Action Alternative would not approve or modify the proposed mining plan of operations. Although the No Action alternative is listed here and is required by NEPA, the Forest Service has a regulatory obligation to approve or require modifications to a proposed mining plan of operations (36 CFR §228.5). The No Action alternative is not discussed further in this document because it would result in a violation of the Forest Service's responsibilities under 36 CFR §228.5. The "Affected Environment" section for each resource provides a discussion of the existing condition of the project area and can serve to make a comparison between the Proposed Action and No Action Alternative.

Alternative 2 – Proposed Action

The Proposed Action is the plan of operations submitted for the Bokan Mountain site which has an estimated area of disturbance of approximately 5 acres. The plan of operations includes the following elements:

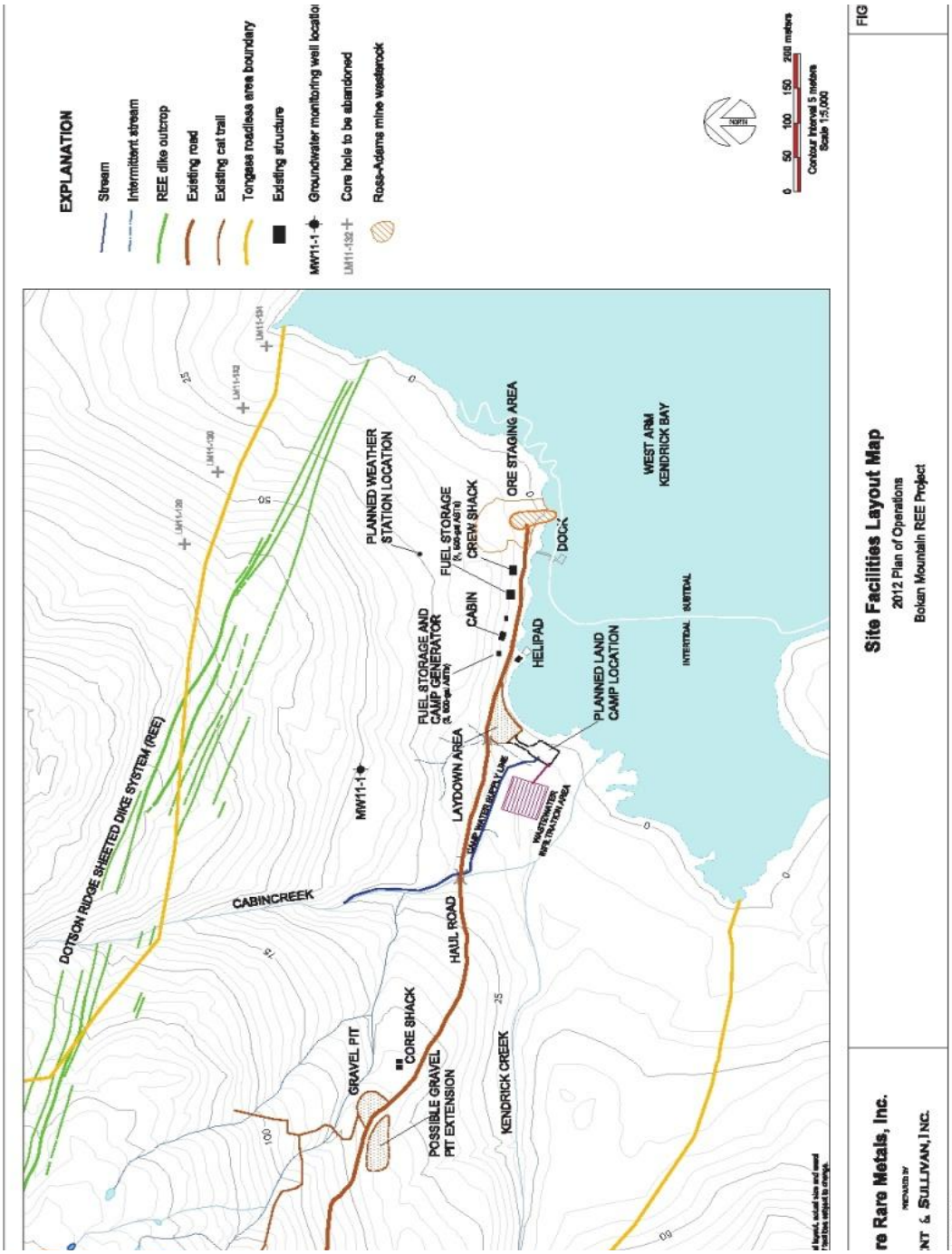
- Track-mounted drilling of approximately 27 holes for geotechnical and environmental purposes using temporary access trails;
- Helicopter-supported drilling of approximately 8 holes for geotechnical, environmental, and/or exploration purposes;
- Installation of a temporary 12 person camp facility; and,

- Use of an existing gravel pit.

Equipment
The following are proposed:
- Track mounted drill rig equipped with an ODEX down-hole hammer and casing drive system (or similar);
- Foundex helicopter-transportable top-drive rotary drill (or similar);
- Small tracked excavator (Cat 315 or similar); and,
- Various ATVs or Kubota utility vehicles.

Facilities and infrastructure
The following are existing or proposed:
- Existing portable core logging buildings;
- Existing fuel storage tanks;
- Existing gravel access road;
- Temporary access trails necessary to facilitate an approximately 8-10 foot wide tracked drill rig;
- Approximately 100 foot camp access gravel road and gravel camp pad;
- One 11x54 foot temporary cookhouse and staff quarters;
- One 10x48 foot temporary 8-person bunk house;
- One 10x20 foot temporary office;
- One 10x20 foot temporary bathrooms and shower house;
- Temporary domestic water treatment and portable camp wastewater facilities which will discharge in accordance with State permits;
- Two 50-75 kW power generators housed in a small shed adjacent to the fuel storage facility; and,
- Underground power line to the camp.

Kendrick Bay
Proposed Drilling and Bulk Sampling Locations Map
2012 Plan of Operations
Bokan Mountain REE Project
DOTSON CREEK
CABIN CREEK
KENDRICK CREEK
Dock



Applicable Forest Plan Direction and Forest Service Policy

The Proposed Action incorporates Forest and Nationwide standards and guidelines, Best Management Practices, and includes the following Forest Service Policy and Forest Plan direction:

- Forest Service Handbook (FSH) 2509.22 – Soil and Water Conservation Handbook;
- Forest Plan Standards for Wildlife (Forest Plan 4-89 through 4-100);
- Forest Plan Standards for Threatened, Endangered, or Sensitive Plant Species (Forest Plan 4-41 through 4-42);

- Forest Plan Standards for Soil and Water (Forest Plan 4-64 through 4-67);
- Forest Plan Standards for Heritage Resources and Sacred Sites (Forest Plan 4-16 through 4-21);
- Forest Plan Standards for Fish (Forest Plan 4-9 through 4-14);
- Forest Plan Standards for Riparian, Minerals and Geology Administration, Plan of Operations (Forest Plan 4-50 through 4-51);
- Timber Production Land Use Designation (Forest Plan 3-116 through 3-121); and,
- Minerals Land Use Designation (applied to project of areas currently approved minerals plans of operations (see Forest Plan 3-122 through 3-127)).

Environmental Consequences

This section provides a summary of the environmental impacts under the proposed action alternative. It discusses the effects relative to applicable physical, biological, and social environments within the project area. To address cumulative effects, the Forest Service examined the environmental impacts in conjunction with past, present, and any reasonably foreseeable future actions. The discussions of resources and potential effects incorporate existing information included in the Forest Plan, project specific resource reports and related information, and other sources as indicated. The planning record for this analysis contains these resource sources of information as well as results of any field investigations. The planning record is located at the Juneau Ranger District in Juneau, Alaska, and is available for review during regular business hours. Information from the planning record is also available upon request.

Wildlife Resources

Affected Environment

A site visit was conducted by a Forest Service wildlife biologist on June 8, 2011. The analysis area includes the area of proposed activities and the watershed surrounding the west arm of Kendrick Bay which ranges in elevation from sea level to 740 meters above sea level at Bokan Mountain, the drill sites are at approximately 300 meters above sea level. Habitats include forested slopes, muskegs in saddles and hilltops, and open, glacially scoured rock on Bokan Mountain. Vegetation consists primarily of Western hemlock and Western red cedar, Sitka spruce and red alder canopy along the shore and in steep valleys. Locally thick underbrush consists of devil's club and a variety of berries, shrubs, and grasses.

TES Species

The marine waters adjacent to the project area are potential and existing habitat for Humpback Whale and Steller Sea Lion. However, there is a very low likelihood of temporal and spatial overlap between proposed activities and marine mammals.

Environmental Consequences

Summary of effects of the proposed activities to species that occur or are more likely to occur on the Tongass National Forest or in adjacent waters.

Species/Issue	Presence		Direct, indirect and Cumulative Effects	
	Species Present in Analysis Area[1]	Species Habitat Present in Analysis Area	Level of Influence[2,4] Determination	Reason for Determination/ Level of Influence
Threatened and Endangered[3]				
Humpback Whale	Yes	Yes	§402.03(b)(3)(i) not measurable Negligible/ No Effect	Effects would be limited to disturbance from flights and boat traffic associated with crew switches and resupply; low levels of wastewater effluent from barge and camp facilities. There is very low likelihood of temporal and spatial overlap between proposed activities and marine mammals.
Steller Sea Lion (western/eastern)	Yes	Yes	*§402.03(b)(1)* Negligible/ No Effect	Effects would be limited to disturbance from flights and boat traffic associated with crew switches and resupply; low levels of wastewater effluent from barge and camp facilities.. There is very low likelihood of temporal and spatial overlap between proposed activities and marine mammals.
Candidate[3]				
Kittlitz's Murrelet	No	No	See below.	See below.
Yellow-billed Loon	Yes	Yes	See below	See below.
Pacific Herring	Yes	Yes	See below.	See below.
Sensitive				
Aleutian Tern	No	Yes	Negligible/ No Impacts	Aleutian terns do not occur in the analysis area.
Black Oystercatcher	Yes	No	Negligible/ No Impacts	Though they may occur there, Black Oystercatchers are not known to use this area. The shoreline lacks appropriate structure for Black Oystercatcher nesting sites, so it is very unlikely that they occur in the analysis area. Rocky shoreline habitats will not be affected by proposed activities.
Dusky Canada Goose	Yes	Yes	Negligible/ No Impacts	This subspecies is not known to occur in the project area, though they may occur occasionally during migration. Would increase human disturbance and cause small habitat changes productive old-growth forest along coastal, estuary or riparian areas.
Kittlitz's Murrelet	No	No	Negligible/ No Impacts	This species does not occur in the analysis area.
Yellow-billed Loon	Yes	Yes	Negligible/ No Effect	This species occurs very rarely on marine waters during winter in Southeast Alaska but is not known to occur in this area. Should this species be present in the area, effects would be limited to disturbance and water quality changes as described above.
Queen Charlotte Goshawk	Yes	Yes	Negligible/ No Impacts	Would increase human disturbance and cause small habitat changes productive to old-growth forest along coastal, estuary or riparian areas.
Pacific Herring	No	Yes	Negligible/ No Effect	There are no known spawning areas for herring near the project area. Effects would be limited to low

Species/Issue	Presence		Direct, indirect and Cumulative Effects	
	Species Present in Analysis Area[1]	Species Habitat Present in Analysis Area	Level of Influence[2,4] Determination	Reason for Determination/ Level of Influence
				levels of wastewater effluent from barge and camp facilities, and small amounts of sedimentation
Management Indicator				
Alexander Archipelago Wolf	Yes	Yes	Minor	Would increase human disturbance and cause small habitat changes to productive old-growth forest along coastal, estuary or riparian areas.
American Marten	Yes	Yes	Minor	Would increase human disturbance and cause small habitat changes to productive old-growth forest along coastal, estuary or riparian areas.
Bald Eagle	Yes	Yes	Minor	Would increase human disturbance and cause small habitat changes to productive old-growth forest along coastal, estuary or riparian areas. There are no known bald eagle nests in the analysis area.
Black Bear	Yes	Yes	Minor	Would increase human disturbance and cause small habitat changes to productive old-growth forest along coastal, estuary or riparian areas.
Brown Bear	No	Yes	Negligible	Brown bears do not occur in the project area.
Brown Creeper	Yes	Yes	Minor	Would increase human disturbance and cause small habitat changes to productive old-growth forest along coastal, estuary or riparian areas.
Hairy Woodpecker	Yes	Yes	Minor	Would increase human disturbance and cause small habitat changes to productive old-growth forest along coastal, estuary or riparian areas.
Mountain Goat	No	Yes	Negligible	Mountain Goats do not occur in the project area.
Red-breasted Sapsucker	Yes	Yes	Minor	Would increase human disturbance and cause small habitat changes to productive old-growth forest along coastal, estuary or riparian areas.
Red Squirrel	No	Yes	Negligible	Red Squirrels do not occur in this area.
River Otter	Yes	Yes	Minor	Would increase human disturbance and cause small habitat changes to productive old-growth forest along coastal, estuary or riparian areas.
Sitka Black-tailed Deer	Yes	Yes	Minor	Would increase human disturbance and cause small habitat changes to productive old-growth forest along coastal, estuary or riparian areas.
Vancouver Canada Goose	Yes	Yes	Minor	Would increase human disturbance and cause small habitat changes to productive old-growth forest along coastal, estuary or riparian areas.
Other				
Migratory Birds	Yes	Yes	Minor	Would increase human disturbance and cause small habitat changes productive old-growth forest along coastal, estuary or riparian areas. There will be no uncapped pipes associated with this project.
Subsistence	Yes	Yes	Negligible	Consistent with section 810 of ANILCA, potential effects of this project on subsistence opportunities and resources were evaluated. Because there would be no significant change in abundance and distribution of, access to and competition for subsistence resources, the proposed project will not result in a restriction of subsistence uses.

[1] "Yes" if the species is known or is likely to occur in the analysis area or in marine waters adjacent to the analysis area. "No" if the species has not been documented or is not likely to occur in the analysis area.

[2] *Level of influence of the effects for management indicator species includes "negligible", "minor", "moderate", or "major". Levels of influence are defined in the "Fish and Wildlife Resource Report". Determinations are only required for listed and sensitive species. Determinations for threatened and endangered species include "no effect", "not likely to adversely affect", or "likely to adversely affect" (Bosch 2004). Determinations for candidate species include "no effects", "not likely to jeopardize proposed species, or adversely modify proposed critical habitat", or "likely to jeopardize proposed species, or adversely modify proposed critical habitat". Determinations for sensitive species include "no impacts", "beneficial impacts", "may impact individuals but not likely to cause a trend to federal listing or a loss of viability", or "likely to result in a trend to federal listing or a loss of viability" (Bosch 2004).*

[3] *There will be negligible/no effect to other listed or candidate species because these species do not or rarely occur and/or key habitats are not present in or around the analysis area.*

[4] *§402.03(b)(1): no effects to T&E species or to designated critical habitat; §402.03(b)(3)(i): Effects are not capable of being measured or detected in a manner that permits meaningful evaluation*

Alternative 2 – Proposed Action

The Proposed Action will primarily result in disturbance to wildlife in the project area from the presence of humans, from aircraft and boats, and noise associated with drilling and camp set up activities. Disturbance may cause stress in animals, reduction in foraging, loss of productivity, or displacement from or changes to preferred habitats. Habitat changes include vegetation removal associated with clearing of drill rig trails, drill pads, bulk sampling areas, gravel pit, and areas around proposed structures such as the camp. Potential reductions in water quality may occur associated with drilling, trail construction and drill movement, and human encampments. Sedimentation may occur where equipment crosses fragile soils near waterways or in locations where equipment will cross streams. Sedimentation is not expected to reach marine waters where marine mammals occur because of the large estuary. Wastewater treatment associated with the camp and barge site may affect water quality. Guidelines and best management practices to avoid or mitigate these potential effects will be incorporated into the plan of operations and will ensure that these effects are minimized and insignificant.

Alternative 2 – Summary for Wildlife Resources

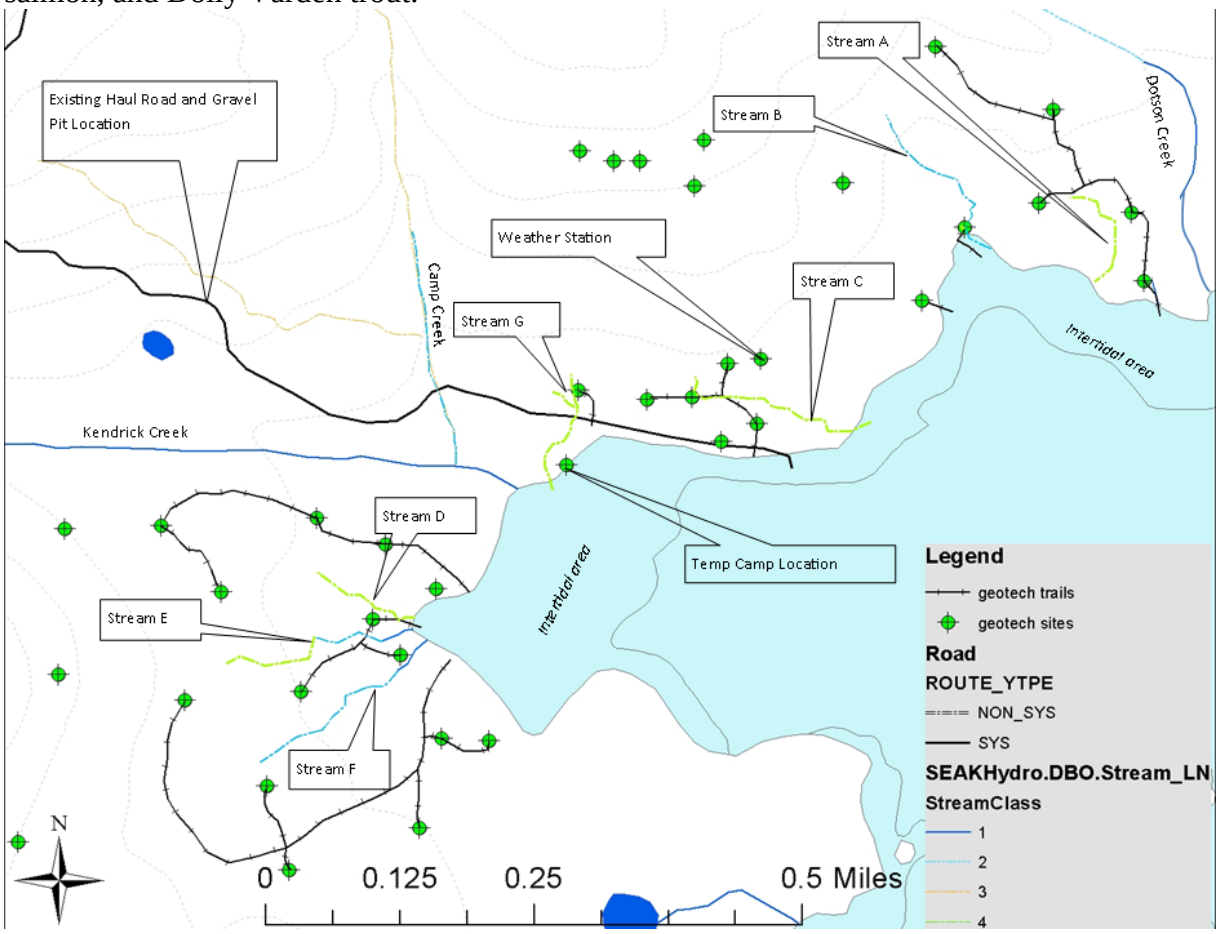
The Proposed Action will result in no significant direct, indirect, or cumulative impact to wildlife resources or habitat because the following National and Regional Best Management Practices, Forest Plan Standards and Guidelines, and Alaska Region Soil and Water Conservation Handbook and mitigations will be followed.

- If any previously undiscovered endangered, threatened, candidate or sensitive species are encountered prior to or during implementation, a District Biologist will be consulted and appropriate mitigation measures will be enacted
- Minimize the footprint of the camp area and retain as much of the surrounding forest as possible
- Ensure that there are no uncapped pipes associated with exploration sites or the camp area which can result in wildlife entrapment
- Operators are required to abide by the Marine Mammal Protection Act and Marine Mammal Viewing guideline

Aquatics Resources

Affected Environment

The analysis area for aquatic resources includes the proposed project area and the fish bearing and non-fish bearing streams which encompass Kendrick Bay. According to the Alaska Department of Fish and Game's Anadromous Waters Catalog and field visits from ADF&G and the Forest Service, verified fish species present in the area include Coho, chum and pink salmon, and Dolly Varden trout.



Environmental Consequences

Summary of effects of the proposed activities to species that occur or are more likely to occur on the Tongass National Forest or in adjacent waters.

Species/Issue	Presence		Direct, indirect and Cumulative Effects	
	Species Present in Analysis Area[1]	Species Habitat Present in Analysis Area	Level of Influence[2,4] Determination	Reason for Determination/ Level of Influence
Pink Salmon	Yes	Yes	Minor	May produce small increases in sedimentation, reductions in water quality, and changes to riparian vegetation. These are not expected to result in significant effects due to BMP, S&Gs and mitigations.

Species/Issue	Presence		Direct, indirect and Cumulative Effects	
	Species Present in Analysis Area[1]	Species Habitat Present in Analysis Area	Level of Influence[2,4] Determination	Reason for Determination/ Level of Influence
Coho Salmon	Yes	Yes	Minor	May produce small increases in sedimentation, reductions in water quality, and changes to riparian vegetation. These are not expected to result in significant effects due to BMP, S&Gs and mitigations.
Dolly Varden Char	Yes	Yes	Minor	May produce small increases in sedimentation, reductions in water quality, and changes to riparian vegetation. These are not expected to result in significant effects due to BMP, S&Gs and mitigations.
Cutthroat Trout	Yes	Yes	Minor	May produce small increases in sedimentation, reductions in water quality, and changes to riparian vegetation. These are not expected to result in significant effects due to BMP, S&Gs and mitigations.
Essential Fish Habitat (EFH) Determination				
Fish Habitat	Yes	Yes	No adverse Effect	There is potential for small increases in sedimentation due to temporary access trails and stream crossings, water withdrawal from streams for drill sites, reductions in water quality, and minor changes to riparian vegetation. These are not expected to result in significant effects because all BMPs, S&Gs and mitigations will be followed. There is expected to be no adverse effect on freshwater or marine Essential Fish Habitat because the proposal will not impact anadromous fish habitat and no effects would be transported to the marine environment during activities associated with this project.

Alternative 2 – Proposed Action

The potential effects to aquatic resources from the proposed action include:

- Reduced water quality due to erosion and sedimentation as the tracked drill disturbs the soil near aquatic resources and wetlands;
- Direct and indirect fish habitat impairment during stream crossings due to sedimentation, stream channel alteration, and potential migration interruption;
- Alteration of riparian habitat due to clearing of vegetation for the creation of temporary trails;
- Potential for petroleum products to enter waterways during equipment operation, refueling, and the return of produced water;
- Temporary reduction in water supply to streams if water is diverted or withdrawn for drilling;
- Disturbance of natural drainage patterns and stream channel stability both at the gravel pit and at the camp pad location; and,
- Reduction in water quality due to sedimentation during construction, and waste management at the completed facility.

Alternative 2 – Summary for Aquatics Resources

Based on the application of the 2008 Forest Plan Standards and Guidelines, the Alaska Region Soil and Water Conservation Handbook, the Regional and National Best Management Practices, combined professional experience, and communications with Ucore representatives, the proposed actions outlined in the plan of operations will not have significant direct, indirect or cumulative effects on the aquatic resources within the project area because the following Best Management Practices will be applied and State and Federal water quality standards will be met:

- Locate the temporary trails outside of Riparian Management Areas and wetlands to the extent feasible (BMPs AqEco-2, Min-2, Road-2, Road-5, Road-7, 12.5, 14.2)
- Incorporate erosion control practices to minimize rutting, exposed soils, and the potential for sedimentation in nearby streams (BMPs AqEco-2, Veg-2, Road-7, 14.5 and 14.8)
- Minimize the number of stream crossings, locate them appropriately, and time the work to minimize impacts to fish (Road-7, AqEco-2, 14.2)
- Rehabilitate and revegetate disturbed areas (BMPs AqEco-3, Veg-2, Veg-3, 12.17, 14.8)
- Follow the refueling and pollution prevention Best Management Practices (BMPs Min-2, Road-10, 12.8, 12.9)
- Avoid water withdrawals from fish streams where feasible and treat any produced water appropriately (BMPs Min-2, Min-7)
- Water withdrawals must be permitted by Alaska Department of Fish and Game
- Avoid the north/northeast part of the existing gravel pit, where a berm separates the pit from a Class III stream channel (BMP AqEco-2)
- Re-route the ditch drainage across the road upslope of the gravel pit using a drivable waterbar to minimize transport of sediments from the gravel pit along the ditch and into the Class III stream downslope (BMP 14.18)
- Avoid disturbance of the adjacent stream channel when constructing the temporary land camp (BMPs AqEco-2, Fac-2. 14.25)
- Preserve to the extent feasible, large conifers within the beach buffer and those near the ephemeral channel in the temporary camp area
- Sanitation system management must meet State standards and Forest Service manual direction. Management requirements and controls to minimize the possibility of water contamination from wastewater collection, treatment, and disposal must be incorporated into a camp facility operation and maintenance plan (BMPs Fac-4 and 12.15, 12.16)

Ecology Resources

Affected Environment

Sensitive and Rare Plants

The analysis area for Ecology Resources is Prince of Wales Island and includes the area of proposed activities and the watershed surrounding the west arm of Kendrick Bay. A pre-field review of existing information concerning plants and lichens designated as sensitive in the Alaska Region was conducted for the project area. This review included the Regional Forester's Sensitive Species List, Alaska Natural Heritage Program (AKNHP) data base records, ARCTOS database, and Forest Service NRIS database, as well as former POW Ecologist, Marla Dillman. Review of proposal details, maps, air photos, and previous management activities was also completed.

Alaska Region Sensitive Species List, known and suspected to occur within the project area on the Craig Ranger District

Common Name	Scientific Name	Occurrence		Habitat
		Project Area	CRD	
Calder's loveage	*Ligusticum calderi*	Suspected	Known	Rocky cliffs, open boggy or rocky slopes, and edges of coniferous forests
Moosewort fern	*Botrychium tunux*	Suspected	Suspected	Human disturbance, upper beach meadows, well drained open areas, alpine and subalpine
Spatulate moonwort fern	*Botrychium spathulatum*	Suspected	Suspected	Human disturbance, upper beach meadows, well drained open areas, alpine and subalpine
Lichen, no common name	*Lobaria amplissima*	Suspected	Known	Beach forest edge
Large Yellow Lady's Slipper	*Cypripedium parviflorum* var. *pubescens*	Suspected	Suspected	Wet Meadows, Peatlands, Calcareous
Henderson's checkermallow	*Sidalcea hendersonii*	Suspected	Suspected	Upper beach meadow, forest edge
Dune tansy	*Tanacetum bipinnatum* subsp. *huronense*	Suspected	Suspected	Upper beach meadow
Alaska rein orchid	*Piperia unalascensis*	Suspected	Suspected	Open forest, streamside
Lesser round-leaved orchid	*Platanthera orbiculata*	Suspected	Known	Open forest, forest edge

Rare Plants Suspected in the Project Area

Common Name	Scientific Name	Habitat	Known Population Location
Western meadow rue	*Thalictrum occidentale*	Streams and lakeshores	• Along the Thorne River • Along the Klawock • Along Luck Lake shoreline • Along Rio Roberts • Along several streams on Kosciusko Island
Northern moonwort	*Botrychium pinnatum*	Forest	• Known along old Rio Roberts trail, and old portion of road east of Rio Roberts River
Lanceleaf grapefern	*Botrychium lanceolatum*	Forest, wetland fen	• Known north of Luck Lake • Known south of Sarkar Lake

Angle leaved bittercress	*Cardamine angulata*	Streambanks, disturbed sites, beach edge	• Known on Goat Island • Known along Fubar and Harris Rivers • Known along the banks of Twelvemile Creek and within the forested riparian area
Pacific Yew	*Taxus brevifolia*	South Prince of Wales, scrub timbered	• Known near Bokan Mountain • Known near Moira Sound
Alaska oniongrass	*Melica subulata*	Forest edge, near beach or muskeg	• Known on Suemez Island • Known near high vulnerability karstlands on northern Prince of Wales
Cutleaf foamflower	*Tiarella trifoliate spp. lacinata*	Forest	• Ginsu
Northern golden carpet	*Chyrsosplenium tetandrum*	Down logs, and along streambanks	• Known along Charlie Creek on Kosciusko Island • Known northeast of Bald Mountain on Heceta • Known along Yatuk Creek
Twinberry honeysuckle	*Lonicera involucrata*	Beach and forest edge	• Warren Cove and False Cove on Warren Island • Several scattered individuals known on south POW, and Long Island

Rare Plants Known in the Project Area

- Pacific Yew

Invasive Plants
Previous plant surveys have been conducted in the general area and along the existing road system. On June 15, 2010, surveys were completed in the area along Kendrick Bay and Dotson Ridge. No invasive plants were found off of the road prism at any of the sites. Previous site surveys done on June 9, 2011 did not find any additional invasive plants that had not been previously documented.
No invasive plant surveys have been completed in association with the proposed trail and drill sites, however, given the lack of past disturbance, it is unlikely that invasive plants have established in this area.

Invasive plants found in the Project Area

Scientific name	**Common name**
Cerastium fontanum	Mouse-ear chickweed
Leucanthemum vulgare	Oxeye daisy
Medicago lupulina	Black medic
Phalaris arundinaceae	Reed canary grass
Plantago major	Common plantain
Taraxacum officinale	Common dandelion

Trifolium repens	White clover

Environmental Consequences

Alternative 2 – Proposed Action

Sensitive Plants
The likelihood of adverse effects to sensitive plants is low to moderate given the small footprint of the drill sites within the potential habitat for the proposed project.

Invasive Plants
The primary environmental consequences of the proposed action include creating habitat suitable for invasive plant introductions by increasing the potential vectors for invasive plant introductions.

Alternative 2-Summary for Ecological Resources

Sensitive and Rare Plants
Under the proposed action alternative, no direct, indirect, or cumulative effects are anticipated to any known sensitive plants. Pacific Yew is the only known rare plant near the project area. Given that no botanical surveys have been completed, undetected sensitive plants could be affected by the proposed action, but given the relatively small footprint of the project area in relation to the analysis area (Prince of Wales) and the following mitigation measures, it is not likely that this proposed action would affect the overall success of the species on Prince of Wales Island. This project may adversely impact individuals but is not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing for any of the sensitive species suspected to occur in the project area.

- Photos of Pacific Yew will be provided to operators to aid them in identification and avoid direct impacts

- If any previously undiscovered sensitive plants are encountered at any time during operations, the population will be protected and any disturbance in the area will be avoided until the Forest Service is contacted for further instruction

Invasive Plants
The proposed action alternative in would likely result in an low to moderate increased risk of invasive plant introduction and spread for Prince of Wales Island, as a whole, given the isolated location of the Kendrick Bay road system. The following mitigations will further decrease the risk of any introduction and spread to low, by preventing the introduction of any new invasive species to the project area and Island.

- Equipment cleaning is required for any heavy equipment (drill, etc) prior to arriving to Kendrick Bay. The equipment/vehicle will be free of soil and/or mud contaminated with plant parts (including roots, seeds, flowers, stems) on the tractor, wheels, shovel, and undercarriage of the vehicle or equipment

- In the event that sediment control is necessary, use of silt fence or coconut fiber matting is required instead of straw bales, since straw bales have been known to introduce invasive species

- The Forest Service shall be contacted before any reseeding

Heritage Resources

Affected Environment

The project area consists of the National Register of Historic Places-eligible Ross-Adams Mine Complex and the area of proposed activities. The project area was examined on October 4, 2012 and October 24, 2012 by a Forest Service archaeologist according to the provisions in the *Third Amended Programmatic Agreement among the USDA Forest Service, Alaska Region, the Advisory Council on Historic Preservation, and the Alaska State Historic Preservation Officer Regarding Heritage Resource Management on National Forests in Alaska.*

Fieldwork conducted within the boundaries of the historic Ross-Adams Mine Complex revealed the project area within the historic site has been extensively disturbed by non-historic mining activities in the early 1970s and has been determined non-contributing to the historic mine. Field surveys and soil probing found no examples of historic mining or historic or prehistoric use of the area. The temporary camp will be located in the footprint of a temporary camp from non-historic mining activities, and has already been determined non-contributing to the historic mine. The existing gravel pit does not contain a feature which contributes to the eligibility of the site to the National Register. The use of the gravel pit will not impact the historic components of the site.

The remainder of the project area is outside the boundaries of the historic site. No significant cultural resources were found in the project area for the proposed action. One known heritage site in the tidelands will be avoided.

Environmental Consequences

Alternative 2-Proposed Action
The proposed action is not expected to have an adverse impact to historic properties; a survey has been completed in the project area and known recorded features will be avoided.

Alternative 2-Summary for Heritage Resources
The Proposed Action will not result in direct, indirect, or cumulative impacts to historic properties because known historic properties will be avoided. The following mitigation measures will be followed:

- If during implementation any archaeological remains, such as stone tool artifacts, a layer of soil with charcoal or fire cracked rock, or historic artifacts such as bottle glass and metal cans are discovered, all work in that location is to be halted and the Forest Service shall be contacted

- Operators will be given GPS coordinates of known heritage resources to avoid

Soil and Wetland Resources

Affected Environment

The project area includes the area of proposed activities and the watershed surrounding the west arm of Kendrick Bay and is located in low elevation forested and muskeg areas of Bokan Mountain, a granitic outcrop within the South Prince of Wales Granitic ecological subsection. Greater than 60% of the proposed trail routes are in wetlands comprised of forested wetland, muskeg, or scrub-shrub wetland types.

The wetland soils of the proposed track-mounted drilling sites are poorly or very poorly drained, range up to 35% slope, and have an organic mat ranging from 10 cm to greater than 100 cm over mineral soil and/or bedrock. These soils have high moisture contents year-round and have very low bearing strength within the organic mat and to a lesser extent within the mineral soil.

Non-wetland areas are predominantly less than 20% slope, deep coarse textured alluvial soils, or greater than 35% slope, shallow to bedrock.

The natural drainage of these sites is, in part, dependent upon preferential flow paths within the soil. Consequently, the natural drainage of these soils is susceptible to damage from compaction or rutting.

The temporary land camp is located on coarse textured beach and alluvial soils. The soils are well drained except for a few poorly drained channels.

Environmental Consequences

Alternative 2-Proposed Action

Potential effects of using a track-mounted drill rig on soil and wetland resources for the proposed drill holes can vary considerably dependent on weather conditions, equipment used, operation plan and practice, site monitoring, and remedial action taken. Ruts may be shallow in nature or exceed 2 feet deep. Subsurface water flow concentration or diversion down trails or ruts may be minimal or substantial. The potential for irreversible commitment of resources exist for productivity if rutting and erosion is substantial. Impacts likely would not be irreversible if ruts are less than 1foot deep and water is not allowed to be diverted down the trail routes.

The construction of the temporary land camp may require filling a small amount of wetlands as quantified by the wetlands determination for the area as needed by the U.S. Army Corps of Engineers. Filling of wetlands for the temporary land camp would result in irretrievable loss of wetlands.

Alternative 2-Summary for Soil and Wetland Resources

The Proposed Action will not have significant negative effects on the soil, wetland, and floodplain resources within the project area because the following Best Management Practices will be applied and State and Federal water quality standards will be met.

- Where necessary, use temporary natural or manufactured matting material as a running surface for drill rig or tracked equipment
- Minimize the number of equipment passes

- Operate during periods of snow pack and/or frozen ground when feasible
- Construction of water bars to transport surface water off of trails
- Use alternative methods of accessing drill sites (i.e. helicopter) when necessary to prevent rutting or damage to soil or wetland resources
- Any drill cuttings or produced water with scintillometer readings above background will be buried at the drill site, returned to the subsurface via the drill hole, or transported to the laydown yard for disposal off site

Compliance with Other Laws and Regulations

National Forest Management Act – The proposed action is consistent with the 2008 Forest Plan, and all proposed activities are allowable under the Timber Production and Minerals LUDs.

Endangered Species Act – Biological evaluations were completed for threatened and endangered species. No threatened or endangered species would be affected by the action alternatives.

Bald Eagle Protection Act – Management activities within bald eagle habitat will be in accordance to a Memorandum of Understanding between the Forest Service and the U.S. Fish and Wildlife Service. No bald eagle nests are known in the project area.

ANILCA Section 810, Subsistence Evaluation and Finding – There is no documented or reported subsistence use that would be restricted by any of the action alternatives; none of the alternatives would result in a significant possibility of a restriction of subsistence use of wildlife, fish, or other foods.

National Historic Preservation Act of 1966 – Section 106 of the National Historic Preservation Act requires that all federal undertakings follow the regulations found at 36 CFR 800 to identify and protect cultural resources that are within the project areas and which may be effected by projects. The Programmatic Agreement between the Tongass National Forest, the Advisory Council on Historic Preservation, and the Alaska State Historic Preservation Officer (SHPO) regarding management of the project area will be followed.

Executive Order 12898 – Environmental Justice – Implementation of this project is not anticipated to cause disproportionate adverse human health or environmental effect to minority or low-income populations because the proposed activities are not expected to cause any affects to human health or result in meaningful adverse environmental consequences.

Clean Air Act – Emissions anticipated from the implementation of the Proposed Action would be of short duration and would not be expected to exceed State of Alaska ambient air quality standards (18 AAC 50).

Clean Water Act - Proposed mining activities, which result in any discharges into waters of the United States, are subject to compliance with Clean Water Act Sections 401, 402, and/or 404 as applicable.

Executive Order 13112 – Invasive Species – Invasive species populations have the potential to spread in the project area; mitigations will be required to reduce this potential.

Executive Order 11988 – Floodplain Management and Executive Order 11990 – Protection of Wetlands – The project area is not located within a floodplain as defined by Executive Order 11988 and there will be no significant effect to wetlands as defined in Executive Order 11990.

Inventoried Roadless Areas – This project is located within an inventoried roadless area. Secretary's Memorandum 1042-154 reserves to the Secretary of Agriculture decision making authority over the construction and reconstruction of roads and the cutting, sale, or removal of timber in inventoried roadless areas. This proposal will be reviewed by the Regional Forester for consistency with Secretary's Memorandum 1042-154.

Executive Order 12962 – Recreational Fisheries - Federal agencies are required, to the extent permitted by law and where practicable, and in cooperation with States and Tribes, to improve the quantity, function, sustainable productivity, and distribution of U. S. aquatic resources for increased recreational fishing opportunities. As required by this Order, the effects of this action on aquatic systems and recreational fisheries have been evaluated and the effects relative to the purpose of this order have been documented. No impact to recreational fisheries is expected from the proposed project.

Magnuson-Stevens Fishery Conservation and Management Act, Public Law 94-265 -This project is not expected to result in any adverse effects to essential fisheries habitat as defined in the Magnuson-Stevens Act because it has been determined that this activity, individually, will not cause any action that may adversely affect essential fish habitat as defined by the Act.

Agencies and Persons Consulted

The Forest Service consulted an interdisciplinary team of resource specialists in the development of this environmental analysis. The Forest Service will also place a legal notice describing the proposed action and soliciting comments in the Ketchikan Daily News, newspaper of record for the Tongass National Forest, Craig Ranger District and will consult with local Tribal governments. This project has been listed on the Tongass National Forest Schedule of Proposed Actions and will be advertised in the Island News.